Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (Presently Amended) An optical sensor comprising at least two sensing regions located proximate to each other

wherein one of the sensing regions is a pressure sensing region and comprises a ~~sealed~~ cavity having a first and a second reflecting surface[[s]], wherein the distance between the first and second reflecting surfaces changes in response to a change in pressure, and wherein a first reflected light and a second reflected light from said reflecting surfaces form ~~formed~~ an interferometric signal representative of a pressure at the location of the optical sensor, and wherein the reflected lights have substantially the same wavelengths as the original incident light,

and wherein the other sensing region is a temperature sensing region substantially insensitive to pressure.

Claims 2-54 (Canceled)

Claim 55. (New) The optical sensor of claim 1, wherein a launch waveguide is operatively connected to the cavity and projects light into the chamber.

Claim 56. (New) The optical sensor of claim 55, wherein the cavity is defined by the launch waveguide and one of the following:

a) a hollow tube and a distal member, wherein the tube is connected to the launch waveguide and the distal member,

b) an end cap, or

c) two half-cups.

Claim 57. (New) The optical sensor of claim 56, wherein the distal member is a reflective waveguide, a disk or an end cap.

Claim 58. (New) The optical sensor of claim 1, wherein at least one of the two reflecting surfaces is coated with an optical coating.

Claim 59. (New) The optical sensor of claim 1, wherein at least one of the two reflecting surfaces is modified.

Claim 60. (New) The optical sensor of claim 59, wherein at least one of the two reflecting surfaces forms a lens.

Claim 61. (New) The optical sensor of claim 1, wherein said cavity comprises a partial vacuum.

Claim 62. (New) The optical sensor of claim 1, wherein said cavity comprises borosilicate glass.

Claim 63. (New) The optical sensor of claim 1, wherein the temperature sensing region comprises a third reflecting surface.

Claim 64. (New) The optical sensor of claim 63, wherein the second reflected light and a third reflected light from the third reflecting surface form an interferometric signal representative of a temperature at the location of the optical sensor.

Claim 65. (New) The optical sensor of claim 63, wherein the temperature sensing region further comprises a fourth reflecting surface and wherein a third reflected light and a fourth reflected light from the third and fourth reflecting surfaces form an interferometric signal representative of a temperature at the location of the optical sensor.

Claim 66. (New) The optical sensor of claim 65, wherein the first and second reflecting surfaces are connected to the third and fourth reflecting surfaces by an optical member.

Claim 67. (New) The optical sensor of claim 1, wherein the temperature sensing region

is located within the cavity, or the temperature sensing region is spaced apart from the cavity.

Claim 68. (New) The optical sensor of claim 1, wherein the temperature sensitive region forms a part of the cavity wall.

Claim 69. (New) The optical sensor of claim 64, wherein the second and third reflecting surfaces define a diaphragm and wherein in response to pressure the diaphragm changes the distance between the first and second reflecting surfaces.

Claim 70. (New) The optical sensor of claim 55, wherein the cavity has a unitary construction and is defined by a tube fused to the launch waveguide and to a capillary tube.

Claim 71. (New) The optical sensor of claim 70, wherein the tube and the capillary tube are made from materials having similar coefficient of thermal expansion.

Claim 72. (New) The optical sensor of claim 71, wherein the length that the capillary tube extends inside the cavity is substantially close to the length of the cavity to compensate for the thermal expansion on the distance between the first and second reflecting surface.

Claim 73. (New) The optical sensor of claim 71, wherein the tube and capillary tube are made from fused silica.

Claim 74. (New) The optical sensor of claim 73, wherein the temperature sensing region is disposed inside the capillary tube.

Claim 75. (New) The optical sensor of claim 70, wherein the capillary tube further comprises a hollow portion to minimize reflected light.

Claim 76. (New) The optical sensor of claim 70, wherein the distal end of the capillary

tube is modified to minimize reflected light.

Claim 77. (New) The optical sensor of claim 55, wherein the launch waveguide is located spaced apart from the cavity and projects light into the cavity.

Claim 78. (New) The optical sensor of claim 77, wherein the distal end of the launch waveguide is angled so that light propagating through the launch waveguide is directed into the cavity.

Claim 79. (New) The optical sensor of claim 77, wherein light from the launch waveguide propagates through the temperature sensing region before propagating through the cavity.

Claim 80. (New) The optical sensor of claim 1, wherein the sensor measures the pressure and temperature at a predetermined downhole location in an oil or gas well.

Claim 81. (New) The optical sensor of claim 1, wherein the cavity is sealed.